

AMENDMENT AND RESPONSE

Serial Number: 08/902,133

Filing Date: July 29, 1997

Title: DYNAMICALLY ELECTRICALLY ALTERABLE PROGRAMMABLE READ ONLY MEMORY AND METHODS OF FABRICATION AND USE

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Attorney Docket No.: 303.356US1

SPECIFICATION OBJECTIONS

The Examiner objected to the title for being "not descriptive" and suggested the title "Dynamic Electrically Alterable Programmable Read Only Memory [D]evice". The title has been so updated. Additionally, the Examiner objected to the specification requiring the inclusion of "[t]he application numbers and/or patent numbers of the commonly assigned applications." The specification has been so updated. Withdrawal of the objections is respectfully requested.

CLAIM OBJECTIONS

The Examiner stated that claim 18 is objected to because "the period is missing at the end of line 14." Claim 14 has been amended to include the period at the end of line 14 of claim 18. Withdrawal of the objection is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 112

The Examiner rejected claims 11 and 19 "under 35 U.S.C. § 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention." In particular for claim 11, the Examiner stated that the phrase "the source and drain regions" in line 13 lacks proper antecedent basis. The phrase "the source and drain regions" has been replaced by the phrase "the source region and the drain region" thereby providing proper antecedent basis. Additionally for claim 19, the Examiner stated that the term "the intergate insulator" in line 16 lacks proper antecedent basis. The word "insulator" has been replaced by the word "dielectric" thereby providing proper antecedent basis. Withdrawal of the rejection is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 102

The Examiner rejected claims 1-5, 7-14, 16-18, 20 and 27 under 35 U.S.C. § 102(e) as being anticipated by Forbes (U.S. Patent No 5,740,104) (hereinafter "Forbes" or "the Forbes

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patent"). Claims 11 and 18 have only been amended to overcome an objection regarding an informality and a rejection under 35 U.S.C. § 112, respectively. Claims 11 and 18 have not been amended in response to this or any art rejection.

Applicant does not admit that U.S. Patent No 5,740,104 to Forbes is prior art to the present invention. Applicant reserves the right to swear behind the Forbes patent. The Forbes patent is nonetheless distinguishable.

Applicant respectfully traverses the rejection. Claims 1, 11 and 27 include an insulator and either a storage electrode or floating gate wherein "*a barrier energy between the insulator and the storage electrode (or floating gate) is less than approximately 3.3 eV.*" [Emphasis added] The Examiner stated that Forbes discloses this element of claims 1, 11 and 27 noting Figure 2. Figure 2, however, discloses only the implantation of crystals to a floating gate at low density at a certain distance from the semiconductor layer to provide "a number of step changes in the drain current" thereby allowing "the storage of multiple bits on a single floating gate." Forbes at col. 3 lines 29-41 and col. 4 lines 10-19. Neither Figure 2 nor its accompanying description in the specification of Forbes disclose an insulator and a storage electrode between which a limited barrier energy exists (specifically one of less than approximately 3.3 eV).

For the reasons given above, the rejection of claims 1, 11 and 27 under 35 U.S.C. § 102(e) fails because all of the limitations of claim 1, 11 and 27 are not found in a single reference. Accordingly, Applicant respectfully requests that the rejection of claims 1, 11 and 27 be withdrawn and that these claims be passed to allowance. Because claims 2-10 and 12-18 as well as 20-26 respectively depend on claims 1 and 11, these claims are also patentable over Forbes. Accordingly, Applicant respectfully requests that the rejection of claims 2-10, 12-18 and 20-26 be withdrawn and that these claims be passed to allowance.

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REJECTIONS UNDER 35 U.S.C. § 103

The Examiner rejected claims 6 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Forbes in view of Aoyama et al. (U.S. Patent No. 4,507,673) (hereinafter "Aoyama" or "the Aoyama patent"). The Examiner stated that "Forbes fails to provide a gate insulating layer of silicon carbide" but that Aoyama provides "a floating gate of silicon carbide" such that combining Forbes with Aoyama "would have been obvious to one of ordinary skill in this art . . ." However, neither claim 6 nor claim 13 provide for "a gate of insulating layer of silicon carbide."

Additionally, in light of the arguments set forth above concerning claims 1-5, 7-14, 16-18, 20 and 27, Applicant respectfully submits that the combination of the two cited references do not contain all of the limitations of the present claimed invention. Neither Forbes nor Aoyama disclose an insulator and a storage electrode between which a limited barrier energy exists (specifically one of less than approximately 3.3 eV). Accordingly, Applicant respectfully requests that the rejection of claims 6 and 13 be withdrawn and that these claims be passed to allowance.

ALLOWABLE SUBJECT MATTER

The Examiner stated that "[c]laim 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. § 112, 2nd paragraph . . . and to include all of the limitations of the base claim and any intervening claims." Claim 19 has been so amended.

NEW CLAIMS

Additionally, the amendment adds new claims 28-32 to further delineate the invention. In particular, claims 28-32 provide further delineation for an intergate dielectric having a permittivity that is higher than a permittivity of silicon dioxide.

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CONCLUSION

Applicant believes the claims are in condition for allowance and request reconsideration of the application and allowance of the claims. The Examiner is invited to telephone the below-signed attorney at 612-373-6904 to discuss any questions which may remain with respect to the present application.

Respectfully submitted,

LEONARD FORBES ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6904

Date Dec. 3, 1998 By Daniel J. Kluth
Daniel J. Kluth
Reg. No. 32,146

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner of Patents, Washington, D.C. 20231 on December 3, 1998.

Daniel J. Kluth
Name

Daniel J. Kluth
Signature